Grade 4   Math

Subclaim: Reasoning

The standard designation is included preceding each evidence statement.

Evidence Statements may:

1. Use exact standard language

2. Be derived by focusing on specific parts of a standard

3. Be integrative - the testing of more than one of the standards on a single item/task without going beyond the standards to create new requirements

Evidence Statements	Clarifications	Relationship to Mathematical Practices
Reasoning ©		
4.C.1-1 Base explanations/reasoning on the properties of operations. Content Scope: Knowledge and skills articulated in 4.NBT.5	●Students need not use technical terms such as commutative, associative, distributive, or property. ●Tasks do not have a context. ●Unneeded parentheses should not be used. For example, use 4 + 3 x 2 rather than 4 + (3 x 2).	MP.3, MP.6, MP.7
4.C.1-2 Base explanations/reasoning on the properties of operations. Content Scope: Knowledge and skills articulated in 4.NBT.6	●Students need not use technical terms such as commutative, associative, distributive, or property. ●Tasks do not have a context. ●Unneeded parentheses should not be used. For example, use 4 + 3 x 2 rather than 4 + (3 x 2).	MP.3, MP.6, MP.7, MP.8
4.C.2 Base explanations/reasoning on the relationship between multiplication and division. Content Scope: Knowledge and skills articulated in 4.NBT.6	●Tasks do not have a context.	MP.3, MP.6, MP.7
4.C.3 Reason about the place value system itself. Content Scope: Knowledge and skills articulated in 4.NBT.A	●Tasks have "thin context"1 or no context.	MP.3, MP.6, MP.7
4.C.4-1 Base arithmetic explanations/reasoning on concrete referents such as diagrams (whether provided in the prompt or constructed by the student in her response), connecting the diagrams to a written (symbolic) method. Content Scope: Knowledge and skills articulated in 4.NF.A	●Tasks have "thin context" or no context. ●Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100	MP.3, MP.5, MP.6
4.C.4-2 Base arithmetic explanations/reasoning on concrete referents such as diagrams (whether provided in the prompt or constructed by the student in her response), connecting the diagrams to a written (symbolic) method. Content Scope: Knowledge and skills articulated in 4.NF.3a, 4.NF.3b	●Tasks have "thin context" or no context. ●Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100. ●Tasks may include fractions that equal whole numbers. Whole numbers are limited to 0 through 5.	MP.3, MP.5, MP.6

4.C.4-3 Base arithmetic explanations/reasoning on concrete referents such as diagrams (whether provided in the prompt or constructed by the student in her response), connecting the diagrams to a written (symbolic) method. Content Scope: Knowledge and skills articulated in 4.NF.4a	●Tasks have "thin context" or no context. ●Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100. ●Tasks may include whole numbers. Whole numbers are limited to 0 through 5.	MP.3, MP.5, MP.6
4.C.4-4 Base arithmetic explanations/reasoning on concrete referents such as diagrams (whether provided in the prompt or constructed by the student in her response), connecting the diagrams to a written (symbolic) method. Content Scope: Knowledge and skills articulated in 4.NF.4b	●Tasks have "thin context" or no context. ●Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100	MP.2, MP.3, MP.5, MP.6
4.C.4-5 Base arithmetic explanations/reasoning on concrete referents such as diagrams (whether provided in the prompt or constructed by the student in her response), connecting the diagrams to a written (symbolic) method. Content Scope: Knowledge and skills articulated in 4.NF.C	●Tasks have "thin context" or no context. ●Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100	MP.2, MP.3, MP.5, MP.6
4.C.5-1 Distinguish correct explanation/reasoning from that which is flawed, and – if there is a flaw in the argument – present corrected reasoning. (For example, some flawed 'student' reasoning is presented and the task is to correct and improve it.) Content Scope: Knowledge and skills articulated in 4.OA.3	●Reasoning in these tasks centers on interpretation of remainders.	MP.1, MP.2, MP.3, MP.6, MP.7
4.C.5-2 Distinguish correct explanation/reasoning from that which is flawed, and – if there is a flaw in the argument – present corrected reasoning. (For example, some flawed 'student' reasoning is presented and the task is to correct and improve it.) Content Scope: Knowledge and skills articulated in 4.NF.1	●Tasks have "thin context" or no context. ●Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100. ●Tasks may include fractions that equal whole numbers. Whole numbers are limited to 0 through 5.	MP.3, MP.6, MP.7
4.C.5-3 Distinguish correct explanation/reasoning from that which is flawed, and – if there is a flaw in the argument – present corrected reasoning. (For example, some flawed 'student' reasoning is presented and the task is to correct and improve it.) Content Scope: Knowledge and skills articulated in 4.NF.2	●Tasks have "thin context" or no context. ●Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100. ●Tasks may include fractions that equal whole numbers. Whole numbers are limited to 0 through 5.	MP.3, MP.6, MP.7
4.C.5-4 Distinguish correct explanation/reasoning from that which is flawed, and – if there is a flaw in the argument – present corrected reasoning. (For example, some flawed 'student' reasoning is presented and the task is to correct and improve it.) Content Scope: Knowledge and skills articulated in 4.NF.B	●Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100. ●Results may equal fractions greater than 1 (including fractions equal to whole numbers limited to 0 through 5).	MP.3, MP.5, MP.6
4.C.5-5 Distinguish correct explanation/reasoning from that which is flawed, and – if there is a flaw in the argument – present corrected reasoning. (For example, some flawed 'student' reasoning is presented and the task is to correct and improve it.) Content Scope: Knowledge and skills articulated in 4.NF.C	●Tasks have "thin context" or no context. ●Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100	MP.3, MP.5, MP.6

4.C.5-6 Distinguish correct explanation/reasoning from that which is flawed, and – if there is a flaw in the argument – present corrected reasoning. (For example, some flawed 'student' reasoning is presented and the task is to correct and improve it.) Content Scope: Knowledge and skills articulated in 3.OA.B, 3.NF, 3.MD.C	●Tasks may have scaffolding2 if necessary in order to yield a degree of difficulty appropriate to Grade 4.	MP.3, MP.6
4.C.6-1 Present solutions to multi-step problems in the form of valid chains of reasoning, using symbols such as equals signs appropriately (for example, rubrics award less than full credit for the presence of nonsense statements such as 1 + 4 = 5 + 7 = 12, even if the final answer is correct), or identify or describe errors in solutions to multi-step problems and present corrected solutions. Content Scope: Knowledge and skills articulated in 4.OA.3	●Tasks may involve interpreting remainders. ●Multi-step problems must have at least 3 steps	MP.1,MP.2, MP.3, MP.5, MP.6, MP.7
4.C.6-2 Present solutions to multi-step problems in the form of valid chains of reasoning, using symbols such as equals signs appropriately (for example, rubrics award less than full credit for the presence of nonsense statements such as 1 + 4 = 5 + 7 = 12, even if the final answer is correct), or identify or describe errors in solutions to multi-step problems and present corrected solutions. Content Scope: Knowledge and skills articulated in 4.NF.3c	●Tasks have "thin context" or no context. ●Denominators are limited to grade 3 possibilities (2, 3, 4, 6, 8) so as to keep computational difficulty lower. ●Multi-step problems must have at least 3 steps	MP.2, MP.3, MP.6, MP.7
4.C.6-3 Present solutions to multi-step problems in the form of valid chains of reasoning, using symbols such as equals signs appropriately (for example, rubrics award less than full credit for the presence of nonsense statements such as 1 + 4 = 5 + 7 = 12, even if the final answer is correct), or identify or describe errors in solutions to multi-step problems and present corrected solutions. Content Scope: Knowledge and skills articulated in 4.NF.3d,4.NF.4c	●Denominators are limited to grade 3 possibilities (2, 3, 4, 6, 8) so as to keep computational difficulty lower. ●Multi-step problems must have at least 3 steps	MP.2, MP.3, MP.5, MP.6
4.C.7-1 Base explanations/reasoning on a number line diagram (whether provided in the prompt or constructed by the student in her response) Content Scope: Knowledge and skills articulated in 4.NF.1	●Fractions equivalent to whole numbers are limited to 0 through 5	MP.3, MP.5, MP.6
4.C.7-2 Base explanations/reasoning on a number line diagram (whether provided in the prompt or constructed by the student in her response) Content Scope: Knowledge and skills articulated in 4.NF.2	●Fractions equivalent to whole numbers are limited to 0 through 5.	MP.3, MP.5, MP.6
4.C.7-3 Base explanations/reasoning on a number line diagram (whether provided in the prompt or constructed by the student in her response) Content Scope: Knowledge and skills articulated in 4.NF.3a		MP.3, MP.5, MP.6
4.C.7-4 Base explanations/reasoning on a number line diagram (whether provided in the prompt or constructed by the student in her response) Content Scope: Knowledge and skills articulated in 4.NF.4a, 4.NF.4b		MP.3, MP.5, MP.6